

REMARKS¹

In the Final Office Action, the Examiner rejected claims 1, 2, and 5 under 35 U.S.C. § 102(b) as being anticipated by State et al., "Superior Augmented Reality Registration by Integrating Landmark Tracking and Magnetic Tracking," Proceedings of SIGGRAPH '96, 1996, pages 429-438 ("State"); rejected claims 6-10 under 35 U.S.C. § 103(a) as being unpatentable over State; and rejected claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over State in view of Drettakis et al., "Interactive Common Illumination for Computer Augmented Reality," Rendering Techniques '97 from the 8th EG Workshop on Rendering, 1997, pages 45-56 ("Drettakis").

By this amendment, Applicants have amended claims 1-5 and 7-10, and have canceled claim 6. Claims 1-5 and 7-10 are now pending in this application.

I. Rejection under 35 U.S.C. § 102(b)

Applicants respectfully traverse the Examiner's rejection of claims 1, 2, and 5 under 35 U.S.C. § 102(b). In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See MPEP § 2131, 8th Ed., Rev. 5 (August 2006). State cannot anticipate claims 1, 2, and 5 because that reference fails to

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement of characterization in the Office Action.

disclose each and every element recited in claims 1, 2, and 5. For example, State fails to disclose a combination including at least “detecting directions of incident light emitted from a source light at a plurality of detectors,” and “calculating a position of the light source existing in real space based on the detected directions,” as recited in amended claim 1, and similarly recited in amended claim 5.

The Examiner alleges State discloses Applicants’ claimed “detecting” by disclosing “the position of the light source is detected through the tracking of the mechanical arm.” Final Office Action, page 2. State instead discloses “[t]he (real) light source is tracked (by the mechanical arm), and the shadow map is calculated in real time.” State, page 437, paragraph 3. State, however, does not disclose “detecting directions of incident light emitted from a source light at a plurality of detectors,” as recited in amended claim 1, and similarly recited in amended claim 5 (emphasis added). State thus also fails to disclose “calculating a position of the light source existing in real space based on the detected directions,” as recited in amended claim 1, and similarly recited in amended claim 5 (emphasis added).

For at least the reason that State fails to disclose each and every element recited in claims 1 and 5, State cannot anticipate claims 1 and 5. Claims 1 and 5 are thus allowable over State, and claim 2 is allowable at least because of its dependence from claim 1. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1, 2, and 5 under 35 U.S.C. § 102(b).

II. Rejections under 35 U.S.C. § 103(a)

Applicants respectfully traverse the rejection of claims 3, 4, and 7-10 under 35 U.S.C. § 103(a) on the ground that a *prima facie* case of obviousness has not been established. To establish a *prima facie* case of obviousness, the prior art (taken alone

or in combination) must teach or suggest all the claim limitations. See MPEP § 2142, 8th Ed., Rev. 5 (August 2006). Moreover, “in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.” USPTO Memorandum from Margaret A. Focarino, Deputy Commissioner of Patent Operations, May 3, 2007, page 2. “[T]he analysis supporting a rejection ... should be made explicit ” and it is “important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the manner claimed.” Id. (citing KSR Int’l Co. v. Teleflex, Inc., No. 04-1350 (U.S. Apr. 30, 2007)).

A *prima facie* case of obviousness has not been established because, at a minimum, the cited references, whether taken alone or in combination, fail to teach or suggest each and every element of claims 3, 4, and 7-10.

B. Claims 7-10

Claims 7-10 depend from claim 5, and thus require all of the elements recited in claim 5. As discussed above, State fails to teach or suggest every element recited in claim 5. State thus also fails to teach or suggest every element required by dependent claims 7-10.

For at least the reason that State fails to teach or suggest every element required by claims 7-10, a *prima facie* case of obviousness has not been established. Claims 7-10 should therefore be allowable. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 7-10 under 35 U.S.C. § 103(a).

C Claims 3 and 4

Claim 3, while of different scope, recites elements similar to claims 5 and 10, such as “detecting directions of incident light emitted from a plurality of light sources at a plurality of detectors,” and “calculating positions of the plurality of light sources existing in real space based on the detected directions.” As discussed above, with regard to claims 1 and 5, State fails to teach or suggest these elements.

Drettakis fails to cure the deficiencies of State. Drettakis discloses “calculat[ing] the lighting ... using hierarchical radiosity” (page section 4, paragraph 1), wherein the hierarchical radiosity may be determined from estimated values of reflectance and exitance for each surface element (see section 4.2, and section 2.3). Drettakis, however, is silent as to “detecting directions of incident light emitted,” as recited in amended claim 3, and thus also fails to teach or suggest “calculating positions of the plurality of light sources existing in real space based on the detected directions,” as also recited in amended claim 3 (emphasis added).

For at least the reason that the references fail to teach or suggest every element recited in claim 3, a *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 3 under 35 U.S.C. § 103(a).

Claim 4 depends from claim 3, and thus requires all of the elements recited in claim 3. Because State and Drettakis fail to teach or suggest every element recited in claim 3, that combination of references fails to teach or suggest every element required by claim 4. A *prima facie* case of obviousness has therefore not been established, and

claim 4 should therefore be allowable. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 4 under 35 U.S.C. § 103(a).


In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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